

Complete Summary

GUIDELINE TITLE

SAGES guidelines for laparoscopic surgery during pregnancy.

BIBLIOGRAPHIC SOURCE(S)

Society of American Gastrointestinal Endoscopic Surgeons (SAGES). SAGES guidelines for laparoscopic surgery during pregnancy. Santa Monica (CA): Society of American Gastrointestinal Endoscopic Surgeons (SAGES); 2000 Oct. 4 p. [31 references]

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SCOPE

DISEASE/CONDITION(S)

- Acute appendicitis during pregnancy
- Acute cholecystitis during pregnancy

GUIDELINE CATEGORY

Treatment

CLINICAL SPECIALTY

Surgery

INTENDED USERS

Physicians

GUIDELINE OBJECTIVE(S)

To prevent loss of fetal life from either spontaneous abortion or premature labor with laparoscopic surgical intervention during pregnancy

TARGET POPULATION

Pregnant women with acute appendicitis or acute cholecystitis

INTERVENTIONS AND PRACTICES CONSIDERED

Laparoscopic surgery during pregnancy

MAJOR OUTCOMES CONSIDERED

Not stated

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

The guideline developer performed a MEDLINE search.

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Not stated

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not applicable

METHODS USED TO ANALYZE THE EVIDENCE

Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Not stated

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

This statement was reviewed and approved by the Board of Governors of the Society of American Gastrointestinal Endoscopic Surgeons (SAGES).

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Despite recent advances in anesthetic, perinatal, and perioperative care, surgical intervention during pregnancy may still result in fetal loss from either spontaneous abortion (especially in the first trimester) or premature labor (especially in the third trimester). Additionally, there is an increased risk of low birth weight infants (<2500gm), premature labor and growth-restricted babies with surgical intervention during pregnancy. Therefore, when ever possible, surgery should be deferred until after parturition. Unfortunately, urgent surgical intervention in the gravid patient is occasionally necessary. The two most common situations encountered by the general surgeon are acute appendicitis and acute cholecystitis.

Acute appendicitis occurs with the same frequency in gravid and in non-gravid females of the same age, leading to appendectomy in one out of every 2,000 pregnancies. In this setting, suspected appendicitis must be treated as if the patient were not pregnant. Thus, the suspicion of appendicitis usually merits operative exploration. Indeed, delay with resultant appendiceal rupture may have dire fetal and maternal consequences.

Acute cholecystitis leads to surgical intervention less frequently, partly due to the availability of effective non-surgical therapeutic alternatives. Cholecystectomy is required in 1 to 6 out of every 10,000 pregnancies. Despite the effectiveness of non-operative care, pregnant patients with symptomatic gallstones have a high rate of recurrent symptoms. Nearly 70% of patients with gallstone pancreatitis will have recurrent biliary pain usually requiring hospitalization. Fetal loss in patients with gallstone pancreatitis is 10% to 20%.

Currently, in non-pregnant patients, appendectomy and cholecystectomy are frequently performed laparoscopically. While pregnancy has been considered a

relative contraindication to laparoscopy, recent reports have refocused attention on this issue.

Potential advantages of laparoscopic appendectomy and cholecystectomy in the pregnant patient include decreased fetal depression due to lessened postoperative narcotic requirements, lower risks of wound complications, and diminished postoperative maternal hypoventilation. Additional benefits may include more rapid maternal recovery. However, the additional requirement of pneumoperitoneum (usually with CO₂) has raised concern about fetal risks. These risks have been postulated to include uterine injury during trocar placement, decreased uterine blood flow or premature labor from the increased intraabdominal pressure, and increased fetal acidosis or other unknown effects due to CO₂ pneumoperitoneum.

Decreased uterine blood flow from pneumoperitoneum remains hypothetical. It is reasoned that this is unlikely to be a major concern given the frequent pressure alternations induced during maternal valsalva, coughing, and straining. Further, it is maintained that pneumoperitoneum may well be safer than manual uterine retraction during open appendectomy or cholecystectomy.

One set of researchers reported fetal respiratory acidosis during CO₂, but not N₂O, pneumoperitoneum in a pregnant ewe model. Fetal hemodynamic abnormalities (tachycardia and hypertension) were noted and were attributed to fetal hypercarbia. The latter was reversed by maintaining mild maternal respiratory alkalosis. Monitoring maternal arterial blood gasses has proven superior to maternal capnography in this regard.

Most case reports and small series indicate that laparoscopy can be safely performed during pregnancy. One report suggests otherwise. Two recent studies suggest there is no difference in fetal outcome for patients with singleton pregnancies undergoing laparoscopy or laparotomy. Despite the growing clinical experience suggesting laparoscopy is as safe as laparotomy in pregnancy, long-term clinical studies are lacking. For this reason caution must be exercised.

Recommendations:

1. Obstetrical consultation should be obtained preoperatively.
2. When possible, operative intervention should be deferred until the second trimester, when fetal risk is lowest (Reedy, Kallen, & Kuehl, 1997).
3. Pneumoperitoneum enhances lower extremity venous stasis (Beebe et al., 1993; Windberger et al., 1995) already present in the gravid patient and pregnancy induces a hypercoagulable state (Weber et al., 1991; Morrell, Mullins, & Harrison, 1992). Therefore pneumatic compression devices should be utilized whenever possible.
4. Fetal and uterine status, as well as maternal end tidal CO₂ and/or arterial blood gases, should be monitored.
5. The uterus should be protected with a lead shield if intraoperative cholangiography is a possibility. Fluoroscopy should be utilized selectively.
6. Given the enlarged gravid uterus, abdominal access should be attained using an open technique.
7. Dependent positioning should be utilized to shift the uterus off of the inferior vena cava.

8. Pneumoperitoneum pressures should be minimized (to 8 to 12 mm Hg) and not allowed to exceed 15 mm Hg (Reedy, Galan, & Richards, 1997).

The Society of American Gastrointestinal Endoscopic Surgeons (SAGES) encourages future studies into methods that increase the safety of laparoscopy in the pregnant patient (e.g., alternative gases or abdominal lift devices).

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

REFERENCES SUPPORTING THE RECOMMENDATIONS

[References open in a new window](#)

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is not specifically stated for each recommendation.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Potential advantages of laparoscopic appendectomy and cholecystectomy in the pregnant patient include decreased fetal depression due to reduced postoperative narcotic requirements, lower risks of wound complications, and diminished postoperative maternal hypoventilation. Additional benefits may include more rapid maternal recovery.

POTENTIAL HARMS

The requirement of pneumoperitoneum (usually with CO₂) during laparoscopy has raised concern about fetal risks. These risks have been postulated to include uterine injury during trocar placement, decreased uterine blood flow or premature labor from the increased intraabdominal pressure, and increased fetal acidosis or other unknown effects due to CO₂ pneumoperitoneum.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better

IOM DOMAIN

Effectiveness
Safety

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Society of American Gastrointestinal Endoscopic Surgeons (SAGES). SAGES guidelines for laparoscopic surgery during pregnancy. Santa Monica (CA): Society of American Gastrointestinal Endoscopic Surgeons (SAGES); 2000 Oct. 4 p. [31 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

1996 Feb (revised 2000 Oct)

GUIDELINE DEVELOPER(S)

Society of American Gastrointestinal Endoscopic Surgeons - Medical Specialty Society

SOURCE(S) OF FUNDING

Society of American Gastrointestinal Endoscopic Surgeons (SAGES). No outside funding sources were used.

GUIDELINE COMMITTEE

Committee on Standards of Practice

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Not stated

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline. It updates a previously issued version (Guidelines for laparoscopic surgery during pregnancy. Surg Endosc 1998 Feb; 12[2]: 189-90).

An update is not in progress at this time.

GUIDELINE AVAILABILITY

Electronic copies: Available from the [Society of American Gastrointestinal Endoscopic Surgeons \(SAGES\) Web site](#).

Print copies: Available from the Society of American Gastrointestinal Endoscopic Surgeons (SAGES), 2716 Ocean Park Boulevard, Suite 3000, Santa Monica, CA 90405; Web site: www.sages.org.

AVAILABILITY OF COMPANION DOCUMENTS

None available

PATIENT RESOURCES

None available

NGC STATUS

This summary was completed by ECRI on November 19, 1999. The information was verified by the guideline developer on February 15, 2000. This summary was updated by ECRI on March 13, 2002.

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